



Regenerable Biocidal Nanocomposite Through Green Chemistry Process

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Problem Statement

- Biocidal halamine polymer currently on the market is made with hazardous materials (e.g., volatile organics, cyanide)
- Process of production requires high temperature and pressure
- Very expensive, at \$250/kg
- Difficult to bring to market

Technology Description

- Biocidal polymer based on nanoalumina polymer composite in a simple two step process
- No hazardous materials
- Reaction carried out in water and at ambient conditions
- Inactivation of E. Coli in wastewater, achieving 99.999% reduction in 20 minutes
- Can be regenerated
- Successfully fixed onto cotton to be used as antibacterial fabric

Expected Results

- Low cost biocidal polymer composite
- Filtration media to treat wastewater
- Antibacterial cotton and cotton blend fabric in medical application

Potential Environmental Benefits

- Significant reduction or elimination of volatile organics, solvents, and hazardous materials
- Reaction is carried out at ambient conditions and therefore saves energy

Fecal Coliform and E. Coli Inactivation in Wastewater Using Nanoalumina Composite

